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NOTES ON THE PLUSIINÆ, WITH DESCRIPTIONS OF NEW SPECIES AND RACES.

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In 1902 it was my privilege to publish a brief monograph of this group, accompanied by illustrations of fifty-eight species.[1] These illustrations were half tone reproductions from photographs of the insects themselves. None but those that have tried to do this, know how difficult and how unsatisfactory it is, if one aims to produce perfect results. In the hope of having the wings in perfect focus, the specimens were freshly mounted shortly before photographing. To avoid shadows, tiny bits of cork were pasted on glass and the specimens pinned in place, the transparent glass thus avoiding a background that would receive shadows. The photographs were good, but far from perfect, and when the half tone plates were made, and then printed the results left much to be desired, I myself finding it difficult to determine some closely allied species from the illustrations alone. It has not surprised me therefore to find some of the species then described as new, and figured, still proving to be confusing to even good entomologists.

During the past five years, therefore, I have been engaged in pre-

[1] See Journal of the New York Entomological Society, Vol. X, pp. 56–77.

paring data and illustrations for a new and more complete monograph. It has been, and still is, my hope to publish a complete set of figures in color, of all the species indigenous to Boreal North America.

That this work might be complete I obtained through the courtesy of Sir George Hampson, and with the assistance of his artist, color drawings of the thirty-six types in the British Museum collection. Since then I have had similar color drawings made for me by Mrs. Beutenmüller, of all species in my own collection, and of several types to be found in museum collections, and at present I have figures of nearly every North American species; indeed we have two or even three figures of several species which vary considerably.

Recently I have obtained estimates for the reproduction of those extremely interesting and accurate drawings, by the four color process, but the prices asked at this time are prohibitive, and consequently I must forego, at least for the present, the satisfaction of publishing in color.

During the past five years however I have had the kindly assistance of several ardent collectors, who have obtained for me several new species or forms, and have courteously granted me the privilege of retaining primary types. To these gentlemen I have returned paratype specimens and it is to authenticate these names, already distributed in various collections, that I have concluded to publish at this time, at least enough in the way of descriptions to satisfy the rules. To this end I present herewith a half-tone plate, made from Mrs. Beutenmüller's colored drawings, and will now append sufficient descriptions so that, together with the figures, the forms may be recognized. I desire to add however that it is my intention in the near future to publish complete detailed, comparative descriptions of all those figured herewith, as well as of others.

A problem that has engaged much of my time and study arose from the fact that Sir George Hampson in his Catalogue of the British Museum (Vol. XIII) described and figured both *Autographa Sackeni* and *Autographa Snowi*. He lists these as "*Syngrapha*" and at this time I shall not discuss his generic separation of this group, but, as I am considering American forms, I shall follow the latest American Check List, Barnes and McDonnough.

I copy from Hampson's synoptic table.[2]

a[1] Forewing with orbicular absent, the U-shaped stigma somewhat pointed below ..... **Sackeni.**
b[2] Forewing with orbicular present, U-shaped stigma rounded below.. **Snowi.**

In the plate of colored figures accompanying the volume, it appeared to me that the figures labeled *Snowi,* more closely resembled *Sackeni.* I so wrote to my friend, that excellent student of the noctuidæ, Mr. F. H. Wolley Dod, who was at the time stationed near London. He kindly visited the British Museum and wrote me that the figures agreed with the museum specimens, and he added that he never had been able to distinguish between *Snowi* and *Sackeni* until Sir George Hampson pointed out the above distinctions.

This proved more puzzling than ever because I have specimens which are undoubtedly *Sackeni,* and which nevertheless agree with both sets of requirements as stated in the synoptic table, the orbicular being sometimes present and sometimes absent, and the sign far from constant.

Then Mr. K. Bowman, of Edmunton, Alberta, sent me some specimens for identification, and among these I found a new form, very close to *Sackeni.* Turning to Hampson's descriptions of *Sackeni* (pp. 417–418) and *Snowi* (pp. 418–419) we find that in his museum he has the type of *Sackeni,* a male, and two females, all from Colorado, which is the type locality. But his description of *Snowi* was based on two specimens, a female from Calgary, Alberta, and a female from Athabasca, B. C., whereas *Snowi* was described from a specimen taken near Las Vegas, New Mexico. This fact led me to suspect that what Dod and Hampson have been identifying as *Snowi,* might really be this new form discovered by Mr. Bowman. This suspicion has been confirmed by Mr. Bowman's sending a specimen to Sir George Hampson who returned it labeled "*Snowi.*" Since then I have a letter from Sir George Hampson from which I quote as follows:

"I had specimens sent me not long ago from Nordegg, Alberta, of what I called in my Catalogue, *Syngrapha Snowi,* on the authority of Wolley Dod, and I was informed that you considered this a new species. I do not know the typical Colorado and New Mexico form, so have no means of judging."

[2] Cat. Brit. Mus., Vol. XII, p. 413.

This finally determines the fact that Hampson's description does not apply to *Snowi,* whereas it does very accurately describe this Canadian species, for which I herewith propose the name *diversigna,* because of the fact that the sign is exceedingly variable.

A few words now in regard to *Snowi.* I know of but two absolutely authentic examples of this species, and both are before me as I write, and are figured herewith. Several museum collections have specimens labeled "*Snowi*" but they are always from Colorado. Bruce and others have distributed a Colorado form under this name, some of which I have readily recognized as *Sackeni,* while a few have been quite puzzling, a question arising as to whether the brownish color had been the true color or whether it was due to the age of the specimen. Of course it is possible that this species may exist in Colorado, and I have myself two or three of Bruce's specimens about which I have not yet fully decided.

The two authentic specimens of *Snowi* to which I have alluded, are, first a specimen loaned me by the University of Kansas which acquired Prof. Snow's collection. This specimen carries a printed "TYPE" label, but no manuscript label in Edward's hand. The locality label reads: "Near Hot Springs, Las Vegas, N. M., 7000 ft., July, '82. F. H. Snow." (See Plate XV, fig. 3.)

The second specimen is one presented by Prof. Snow to Mr. Cramer, passing from him into the possession of Mr. Jacob Doll, and from Mr. Doll to myself. This carries a printed locality label the exact facsimile of the other except that the date is "Aug., 82."

In Edwards's description of *Snowi*[3] he does not state the date of capture of the single specimen of *Snowi* from which he described his species, but on same page he dscribes *Heliothis suavis,* taken by Prof. Snow at the same locality, Aug., 1882, which at least indicates that Prof. Snow was collecting in that locality in August as well as in July, 1882, the date on the supposed "type" of *Snowi.* I raise this point because I am of the opinion that the July specimen is not the true type, being 35 mm. in expanse, whereas Edwards tells us that his type expands 30 mm., which is exactly the expanse of my August, 1882, specimen. It therefore seems at least credible that the labels were accidentally exchanged and that Prof. Snow really let Mr. Cramer have the true type. Moreover, the description fits the

[3] Papilio, 1884, Vol. 4, p. 44.

smaller specimen better than it does the larger one, especially as to the sign. However that may be, one of these two specimens is probably the type and the following descriptions are based upon them.

From these two authentic specimens of *Snowi,* fifteen specimens of *Sackeni* from various mountains in Colorado, and nine specimens of *diversigna* taken at Nordegg, Alberta, by Mr. Bowman, and one specimen received some years ago from Mr. Bean taken at Laggan, I append the following brief descriptions which point out the main characters by which the three species may be separated.

Snowi. Rich brown of reddish tint.

Sackeni. Purplish brown.

diversigna. Brownish purple.

Snowi. The space between the basal line and the A.T. line is brown, concolorous above and below the median vein. "At base of costa is an obscure orange streak, bordered with brown."

Sackeni. The space between the basal line and the A.T. line is mainly yellowish above the median vein, and brownish below. The basal line and the A.T. line meet on the costa, the latter passing, sharply oblique, downward and then inward. The space between the two lines, and above the vein is more or less filled in with yellowish, and when completely filled forms a distinct sagitate mark. This character, however, is variable.

diversigna. The space between the basal line and the A.T. line is concolorous above and below the median vein, slightly olivaceous. The A.T. line begins on the costa distinctly separate from the basal line.

As a further distinguishing characterization I quote the following from an incomplete manuscript description of *diversigna.*

Autographa diversigna new species.

The primaries are mainly brownish purple, profusely speckled with microscopic dots, giving the wing, especially in the lighter shades, a reticulated appearance. The median space below the cell is filled with chocolate brown, darkest near the sign and showing the reticulation of microscopic dots especially below vein 1.

In *Snowi* and *Sackeni* the median space is filled with brown of solid color.

This new species, *Autographa diversigna* is described from nine specimens taken by Mr. K. Bowman at Nordegg, Alberta, and one specimen taken by Mr. Bean at Laggan. The type is with the author, also paratypes. Two paratypes are with Mr. Bowman, and one has

been sent to the museum at Ottawa, in appreciation of courtesies extended.

Autographa interalia new species.

This is a new form, also discovered at Nordegg by Mr. K. Bowman, who has let me see two specimens, both females, and in fine condition, so that there can be no doubt about my determination of this as a new form. I mention this because of the fact that I myself collected a male of this species at Banf, but being a poor specimen I mistakenly placed it with my series of *alias*. *Interalia* adds one more species to the group including *alias* and *rectangula*, having the same peculiar sign. It varies from them by being uniformly gray and practically unsilvered. *Alias* is browner with more silver whereas *rectangula*, though brown, is of a blacker hue than *alias*.

The type of *interalia* is with the author, and a paratype with Mr. Bowman, both females.

Autographa rectangula race **nargenta** new race.

Autographa rectangula, the older name, takes precedence over *Autographa mortuorum*, and in many lists is given as a synonym. Sir George Hampson, with good judgment I think, retains *mortuorum* as an aberration, thus accounting for the name. *Mortuorum* differs from *rectangula* only in the sign, which in *mortuorum* is divided so that it has an outer dot. In some specimens this dot even is absent, only the inner half of the sign appearing. This form, or "aberration" as Sir George Hampson calls it, occurs more often in Canada than in the United States.

I believe that I have discovered a race of this species worthy of a name. I have suspected this for some time, basing my notion upon two specimens sent to me by Mr. Hanham from Vancouver's Island, and my suspicion has been confirmed by considerable material received from Mr. Cockle, at Kaslo, B. C. I may say in passing that Mr. Cockle has taken numerous species that I have heretofore obtained mainly from Vancouver.

In the typical *rectangula* the T.P. line usually shows merely as the inner edge or border of a silvery cloud which more or less fills the space between the T.P. line and the outer border of the primaries. I have examined two hundred eastern examples.

In the new race, *nargenta,* there is much less silvering, and the ground color is blacker, making the insect, as a whole, darker. The best distinguishing character will be the T.P. line which is distinct and doubled, inclosing silver.

The type and paratypes are with the author, but paratypes have been sent to Mr. Cockle and Mr. Bowman.

Autographa celsa race **sierræ** new race.

I recently sent to Sir George Hampson a set of four specimens of *Autographa celsa* showing the range of variation, which is from a light brown to almost black. In reply he writes as follows: "I should call all these specimens *octoscripta,* Grote. H. Edwards distinctly describes the stigma of the Oregon species as greenish and silvery, whilst in those you send it varies from pure white to golden silvery."

There are at hand two "types" of *celsa,* one in the Edwards collection in the American Museum of Natural History, and the other in the Neumoegen collection, Brooklyn Museum. We may perhaps call the sign in the former silvery, but in the latter it is certainly golden.

I have a long series taken by Mr. Hanham in Vancouver's Island. I have specimens from Oregon and specimens also taken by Mr. Cockle in Kaslo, B. C. These have been identified by comparison with the above mentioned types, and though this species varies, quite as much as does *A. californica,* there is no doubt about this identification. Though I have never been able to find Grote's type of *octoscripta, celsa* is quite distinct from what I have been calling *octoscripta.* The sign in *celsa* therefore is variable from white, to silvery and golden.

Some three years ago at Lake Taho I captured five females of a beautifully soft gray creature which at first I thought to be a new species. Except in color however I cannot separate it from *celsa.* In the American Museum, I found a specimen of this form placed with *celsa,* and labeled "Sierra Nev., Cal." Later I found two specimens in the collection of Dr. Barnes labeled "Deer Park Springs, Lake Taho." More recently still Dr. Van Duzee sent me a specimen labeled "Trinity Meadows, Trinity County, Cal." Dr. Van Duzee writes me as follows: "Trinity Meadows, though much nearer the coast has many Sierra species and it is not surprising that a Taho

species should be taken there." Later still I have obtained a beautiful example taken by Miss Hewlett at Nellie, California. I believe therefore that we here have a California form of the Oregon and Canadian species. It may even prove to be a good species.

Celsa, race *Sierræ* is uniformly a soft bluish gray, rendering it quite distinct from the brownish or blackish-brown northern forms. The sign in all the specimens I have seen is bright golden.

Type with the author, paratypes with Dr. Van Duzee, Dr. Barnes and American Museum, N. Y.

Autographa magnifica new species.

This beautiful species was taken (if I am correctly informed) by one of the forestry entomologists of the Department of Agriculture, of the Dominion of Canada. It was taken at Ueluelet, Vancouver's Island, which I believe is at the northernmost and wildest part of the island. It is therefore the property of the museum at Ottowa, and I have been permitted the privilege of naming the species. More complete description will be published later, as with others herewith figured. At present it must suffice to say that while allied with *octoscripta* it is easily separated therefrom by the fact that the ground color is a clear creamy white, causing the lines and marks to show with great distinctness. Expanding 40 mm., it is larger than any example of *octoscripta* that I have seen. The type, a female, remains with the Ottawa museum.

I may mention here that I have a male specimen taken in Vancouver's island which is most puzzling, being intermediate between this new form, *magnifica,* and *octoscripta.* It is generally speaking much darker than *magnifica,* possibly due to the fact that the lighter color is profusely dotted with macroscopic black dots, a characterization however also seen in *octoscripta.* Nevertheless this may prove to be the male form of *magnifica,* to which opinion I am more inclined by the fact that I have never seen *octoscripta* from the west coast.

Abrostola microvalis new species.

This is a species of which I have had a single specimen for nearly twenty years. More recently I have obtained others, and I propose the above name, because in general appearance it is a minute *ovalis.* A more accurate description will be given later. It expands 24 mm., the female 26 mm. Habitat Texas.

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